

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
2 June 2005 (02.06.2005)

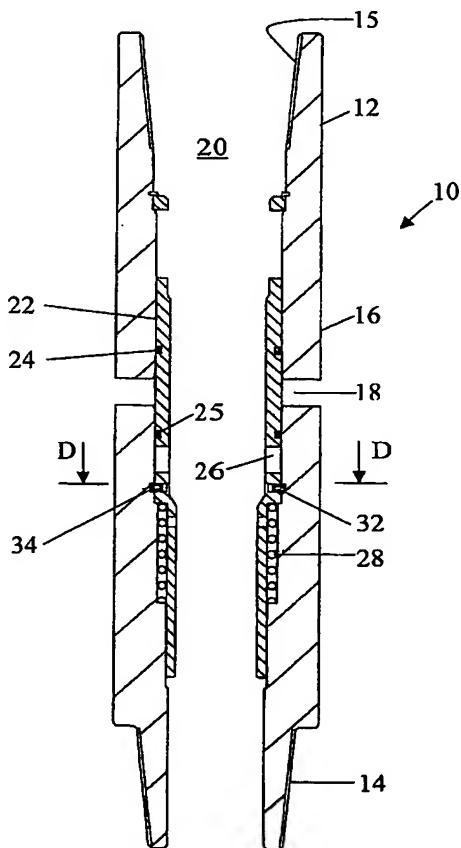
PCT

(10) International Publication Number  
**WO 2005/049959 A1**

- (51) International Patent Classification<sup>7</sup>: **E21B 21/10**
- (21) International Application Number:  
PCT/GB2004/004840
- (22) International Filing Date:  
17 November 2004 (17.11.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
0326867.9 17 November 2003 (17.11.2003) GB  
0402858.5 10 February 2004 (10.02.2004) GB
- (71) Applicant (for all designated States except US):  
**CHURCHILL DRILLING TOOLS LIMITED**  
[GB/GB]; 33 St Swithin Street, Aberdeen AB10 6XL (GB).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **CHURCHILL, Andrew Phillip** [GB/GB]; 33 St Swithin Street, Aberdeen AB10 6XL (GB).
- (74) Agents: **SZCZUKA, Jan, Tymoteusz et al.**; Marks & Clerk, 19 Royal Exchange Square, Glasgow G1 3AE (GB).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: DOWNHOLE TOOL



(57) Abstract: A downhole tool (10) comprises a body (12) adapted to be incorporated in a drill string. The body defines a bore (20) and having a valve arrangement including a flow port (18) in the wall of the body and a valve element (22) biased towards a position to open the port. The valve element is initially retained in a position to close the flow port (18) but can be released as required to allow the flow port to be opened. The tool may be utilized as a bypass sub or a dump sub. For use as a bypass sub, the body bore below the flow port may be closed or restricted.

WO 2005/049959 A1



GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— *with international search report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*